

1
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dyscotic liquid crystal, a dispersed system of TPD in polymer (polycarbonate, polystyrene, or PVK), and semiconductor substances, such as a-Se doped with C1 at 10 to 200 ppm, are suitable, because the greater the difference between the mobility of the negative charge, for example, stored in the electrode layer 11, and that of the positive charge, which is opposite in polarity to it, (for example, 10^2 or over, preferably 10^3 or over), the better. Particularly, organic compounds (such as PVK, TPD, and a dyscotic liquid crystal) are preferable because they have immunity to light, and because the dielectric constant is generally small, the capacitance of the charge transporting layer 13 and that of the photoconductive layer for reading, 14, are decreased, resulting in an increased efficiency of signal taking out when reading. "Having immunity to light" means that they exhibit practically no conductivity when irradiated with the recording light L1 or the reading light L2.

Page 60, first paragraph:

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FIG. 18A to FIG. 18C are drawings illustrating the schematic configuration of a radiation solid-state detector according to a eighth embodiment of the present invention, FIG. 18A being a perspective side view, FIG. 18B being an X-Z sectional drawing at the portion shown by arrow-Q, and FIG. 18C being an X-Y sectional drawing at the portion shown by arrow-P. In FIG. 18A to FIG. 18C, any element equivalent to that of the detector 20 according to the seventh embodiment as shown in FIG. 17A to FIG. 17C is provided with the same reference numeral, and the

B2
description about it will be omitted except when required. With this detector 20a according to the eighth embodiment, the microplates 28 for the above-stated detector 20 are removed, and in recording, the stripe electrode 26 is connected to the sub-electrode 27 to positively utilize the sub-electrode 27 for formation of the electric field.

Page 61, first full paragraph:

B3
FIG. 20A to FIG. 20C are drawings illustrating the schematic configuration of a radiation solid-state detector according to a ninth embodiment of the present invention, FIG. 20A being a perspective side view, FIG. 20B being an X-Z sectional drawing at the portion shown by arrow-Q, and FIG. 20C being an X-Y sectional drawing at the portion shown by arrow-P. In FIG. 20A to FIG. 20C, any element equivalent to that of the detector 20 according to the seventh embodiment as shown in FIG. 17A to FIG. 17C is provided with the same reference numeral, and the description about it will be omitted except when required. With this detector 20b according to the ninth embodiment of the present invention, the microplates 28 for the above-stated detector 20 are removed, and the element 26a of the stripe electrode 26 and the element 27a of the sub-electrode 27 are alternately disposed in one pixel. With the detector 20b shown, three elements 26a and three elements 27a are provided in one pixel. When this detector 20b is used for recording and reading, it is recommended that the elements 26a and the elements 27a be handled in units of one pixel. Assuming that the size of one pixel for the detector 20 is the same as that

B3
for the detector 20b, the width W_b' of the element 26a and the W_c' of the element 27a for the detector 20b are set more narrowly than the width W_b and the W_c for the above-stated detector 20. Now that semiconductor formation technology is very advanced, it is easy to form both elements 26a and 27a sufficiently narrowly to manufacture the detector 20b.

Page 63, third full paragraph:

B4
This detector 30 comprises an electrode layer 31, a photoconductive layer for recording, 32, a charge transporting layer 33, a photoconductive layer for reading, 34, and an electrode layer 35 which are stacked together in this order, providing a sub-electrode 37 at the boundary between the photoconductive layer for reading, 34, and the charge transporting layer 33. As the substances for these layers, the substances for the detector 10, etc. according to the first embodiment are used. As with the detector 10, etc., the electrode of the electrode layer 35 is a stripe electrode 36 with which a number of elements 36a are arranged in the form of stripes, and microplates 38 which have roughly the same size as the pixel pitch are provided in a charge storing section 39, which is the boundary between the photoconductive layer for recording, 32, and the charge transporting layer 33. An area 35a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 67, second full paragraph:

36
This detector 40 comprises an electrode layer 41, a photoconductive layer for recording, 42, a charge transporting layer 43, a photoconductive layer for reading, 44, and an electrode layer 45 which are stacked together in this order, providing a sub-electrode 47 in the charge transporting layer 43. As the substances for these layers, the substances for the detector 10, etc. according to the first embodiment are used. As with the detector 10, etc., the electrode of the electrode layer 45 is a stripe electrode 46 with which a number of elements 46a are arranged in the form of stripes, and microplates 48 which are effective to concentrate the latent image charges on the pixel central portion are provided in a charge storing section 49, which is the boundary between the photoconductive layer for recording, 42, and the charge transporting layer 43. An area 45a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 69, second full paragraph:

36
This detector 50 comprises an electrode layer 51, a photoconductive layer for recording, 52, a charge transporting layer 53, a photoconductive layer for reading, 54, and an electrode layer 55 which are stacked together in this order, providing a sub-electrode 57 at the boundary between the photoconductive layer for recording, 52, and the charge transporting layer 53. As the substances for these layers, the substances for the detector 10, etc. according to the first embodi-

36
ment are used. As with the detector 10, etc., the electrode of the electrode layer 55 is a stripe electrode 56 with which a number of elements 56a are arranged in the form of stripes. An area 55a is filled with a high-polymer material, such as polyethylene in which some quantity of carbon black or other pigment is dispersed.

Page 74, first full paragraph:

37
Further, with any of the detectors according to the above-stated embodiments, the photoconductive layer for recording exhibits a conductivity when irradiated with the radiation for recording, but, the photoconductive layer for recording according to the present invention is not always limited to this, and the photoconductive layer for recording may be such that it exhibits a conductivity when irradiated with the light emitted by excitation on the radiation for recording (refer to Japanese Patent Application No. 10 (1998)-232824). In this case, on the surface of the first electrode layer must be stacked a wavelength conversion layer, known as an X-ray scintillator, which wavelength-converts the radiation for recording into light in the other wavelength region, such as blue light. As this wavelength conversion layer, it is preferable to use such a substance as cesium iodide (CsI). The first electrode layer must be permeable to the light emitted in the wavelength conversion layer by excitation on the radiation for recording.